

Study of Awareness, Attitude, and Utilization Pattern of Health Information Technology among Allied Health Professionals -- A Descriptive Study

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ABSTRACT:

Objective: To assess the awareness, attitude, and utilization pattern of Allied Health Professionals towards HIT in an allied health college under a teaching university of India. **Method:** Self-structured, pre-tested questionnaire that probe into the awareness, attitude, and utilization pattern of HIT among allied health professionals were administered to a randomly selected group of 40 allied health professionals. Descriptive statistics of their awareness, attitude and utilization pattern were calculated. **Result:** Significant difference was observed in Awareness towards HIT among professionals particularly relating to computer peripherals, internet, electronic health records, and International Classification of Diseases. Male respondents showed significant attitude difference towards the use of HIT in improving evidence-based practice, reducing cost of healthcare, and scheduling patient appointments. Senior professionals showed better utilization pattern than juniors. **Conclusion:** Lack of awareness about HIT could be due to the fact that most hospital information systems do not have rehabilitation modules and all the existing modules are physician-centered. Positive attitude toward HIT is an indication that allied health professionals are ready to accept and are open for HIT and their inclusion should be an issue for consideration. Utilization pattern of allied health professionals are indicative of the fact that most of them are making use of HIT in their profession. **Recommendation:** Rehabilitation module should be incorporated during design and development of any health information system and proper awareness and training programs to be conducted for effective and efficient utilization of these systems.

Key words: Health Information Technology (HIT), allied health professionals, awareness, attitude, utilization pattern.

INTRODUCTION

Over the last few decades, the implementation of Information Technology (IT) has become increasingly common in healthcare settings [1, 5, 6]. Initially, they were used mostly for administrative and financial purposes, but in today's ambitious and challenging healthcare scenario the healthcare providers completely depend on Health Information Technology (HIT) for timely and instant access to health information. At any given point of time during patient encounter or afterwards, HIT allows the provider to collect, store, retrieve and transfer information in and across healthcare settings.

The allied health professionals are allies in the healthcare team, working together to make the healthcare system function effectively. Members of the allied health profession use HIT extensively to support healthcare team in providing quality healthcare. Since HIT is inevitable for Indian hospitals, this study will

help get a better insight towards design and implementation of HIT with allied health professionals' requirements addressed and to help healthcare providers in quality decision making. This will help to better understand the utilization pattern of HIT in allied health practices. There have been studies to understand the attitude of physicians towards HIT and their utilization pattern, but studies on Allied Health Professionals are not much. Thus, it becomes equally necessary to know the awareness level and the attitude of allied health professionals apart from physicians' and nurses' for its sustainable use [2 - 4].

METHODOLOGY

The present study was conducted from October, 2006 to December, 2006. A structured interview was conducted with the randomly selected 40 allied health professionals involved in patient care, teaching

and research, working in an allied health college under a teaching university in India. The samples were proportionately selected from each category. Inquiries were made regarding their awareness, attitude and utilization pattern related to health information technology in their practices. Information was obtained on a pre-tested questionnaire designed for the above. The first section of the questionnaire sought identification of the respondents. The awareness / knowledge of Health Information Technology was assessed by analyzing responses to a set of 8 question (**Section 2: question 1 to 8**) based on 5 point likert scale (**Excellent – 5, Very Good-4,**

Good-3, Average-4, Not Known-1) while another set of 12 questions (**Section 3: questions 1 to 12**) also based on 5 point likert scale (**strongly disagree-1, Disagree-2, No Opinion-3, Agree-4, Strongly Agree-5**) to know their opinion on health information technology and utilization pattern (frequency) were assessed by analyzing 6 question (**Section 4: question 1 to 6**) based on 4 point likert scale (**Never-1, Sometime-2, Often-3, always-4**). The expectations related to the features of HIT in their practices were also collected. Each correct answer was given a positive score by the respondent and scores were structurally analyzed and valid conclusions were drawn.

RESULTS AND DISCUSSION

Demographic profile of the participant

Table 1 - Gender and designation-wise distribution of the participants

Designation	Male		Female		Total
	Number	%	Number	%	
Lecturer	14	53.8	12	46.2	26
Asst. Prof	6	75.0	2	25.0	8
Professor/Associate	4	66.7	2	33.3	6
Total	24	60.0	16	40.0	40

Table 2 – Mean age, range and standard deviation of the participants

Designation	Mean (Years)	Range	SD
Lecturer	28.04	21-59	7.19
Asst. Prof	30.75	28-36	3.01
Professor/Associate	41.83	30-54	9.43
Total	30.65	21-59	8.36

A total of 40 allied health professionals including 26 lecturers, 8 Assistant Professors, and 6 Associate Professors and Professors with mean age of 30.65 participated in the study.

Awareness of the participants towards Health Information Technology (Table 3)

It was found that 7.7% of the lecturers had excellent knowledge, 11.5% very good, 15.4% good, and 23.1% were just familiar with Health Information Systems (HIS) and related aspects, while majority of the respondents 42.3% were not aware of HIS. 3.2% Assistant Professors showed excellent awareness, while 16.6% showed very good, 13.5% good, and 31.3% were just familiar about HIS, while

35.4% of the total respondents were not aware of it.

Compared to lecturers and assistant professors, 12.5% of the associate professors and professors showed excellent knowledge, 19.5% very good, 15.3% good, and 18% knew a bit about HIS, while 34.7% showed no knowledge about it.

There was no obvious significant difference in the awareness of participants as per their designation ($p>0.05$). High significance was although noticed between the age of the respondents towards awareness of computer peripherals ($p=0.00$) and internet ($p=0.01$). Female respondents showed more awareness to Electronic health records than male ($p=0.007$)

irrespective of their designation. Male respondents showed more awareness of ICD ($p=0.01$) and computer peripherals ($p=0.03$) irrespective of their age.

When awareness of HIT was studied with reference to attitude of allied health professionals, it was found that Awareness of computer and its peripherals shows high correlation towards improving treatment practices ($p=0.00$), reducing the paperwork and improving medical documentation ($p=0.01$), and also in scheduling patient appointment ($p=0.005$). Knowledge of internet also showed significant correlation in scheduling of patient appointment ($p=0.016$), and it was considered unavoidable by the allied health professionals ($p=0.027$)

Attitude of participants towards Health Information Technology (Table 4)

When asked about the use of HIT in improving treatment practices; analyzing quality of care; reducing cost of healthcare; protecting patient privacy; making billing process faster; facilitating continuing education programs; reducing paper work; providing continuous reports of patient care; scheduling patient appointment; research and study; and promoting evidence based practice, 83.6% of Lecturers, 79% Assistant professors, and 77.8% Associate and Professors agreed to using HIT in their practice for all the above.

There was no significant difference observed in the attitude of respondents as per their designation except in terms of HIT to promote evidence based healthcare practice ($p=0.003$). Though, no significant difference was observed in the attitude of respondents gender-wise except in terms of HIT in reducing cost of healthcare practice where male respondents agreed more than female respondents ($p=0.02$). Attitude of the professionals towards use of HIT age-wise showed no significant findings ($p>0.05$).

Use of HIT in scheduling patient appointment showed significant difference in male respondents, who were using it more ($p=0.05$).

Utilization pattern of Health Information Technology (Table 5)

21.2% of the Lecturers were found to utilize HIT always, while 20.5% used it often and 21.2% used it only some times. But, 30.1% never used HIT in their practice of patient care, teaching, research and study. Among the Assistant professors, 27.1% used HIT always, 39.6% used it often, 14.6% used it sometimes but 18.7% never used it. Study shows the trend of utilization pattern of HIT among Associate Professors and Professors towards more often (52.8%) to always (19.4%).

Awareness of DBMS and its application as well as knowledge of medical transcription in documenting health information showed a significant utilization trend among the allied health professionals ($p=0.05$). Even Knowledge of EHR and PACS highly impacted research and study as well as teaching and demonstration ($p=0.02$).

CONCLUSION

The study showed that 70% of the allied health professionals had very minimal knowledge about Medical Transcription and Picture Archiving and Communication Systems, while 75% did not know about HL-7, 65% about EPR-6, 65% about HIPAA, 55% about POMR, 42.5% about ICD, and 37.5% about SOAP format. Lack of awareness about HIT could be due to the fact that most HIS do not have rehabilitation modules and all the modules are physician-centered.

All allied health professionals, irrespective of their designation, accepted that HIT helps in improving treatment practices; analyzing quality of care; facilitating continuing education programs, research and study, supporting evidence based practice, reducing paper work; providing continuous reports of patient care; scheduling patient appointment (more than 80%). Positive attitude toward HIT is an indication that allied health professionals are ready to accept and are open for HIT and their inclusion should be an issue for consideration.

Though 30% of the allied health professionals, irrespective of their seniority or designation, had never used health information technology for documenting patient care, 50% for scheduling patient appointment, 17.5% for accessing investigation results, 22.5% for any statistical analysis and presentation of information, but an impressive 47.5% used HIT for documenting patient care, 40% for scheduling patient appointments, 55% for teaching and demonstration, 67.5% for research and study, 67.5% for accessing investigation result, 57.5% for statistical analysis and presentation of information. Utilization pattern of allied health professionals are indicative of the fact that most of them are making use of HIT in their profession.

RECOMMENDATION

Workshops, continuing medical education programs, seminars to be conducted at regular intervals to reinforce the importance of health information technology in allied health practice.

Inclusion of a rehabilitation module to enable therapists in long term care or rehabilitation facility to register and access data about their patients at the point of care easily was felt by most of the therapists. Their was a general feeling that though they used HIT in their day to day teaching and training, but they would want a module especially designed and customized for use by them during their clinics. The module should automatically remind of pre-scheduled treatments / therapies, automatically update itself and generates charges for Billing, give daily census data and can have additional system to generate reports to analyze the productivity of the therapists.

Thus, while designing and development of health information systems, the allied health professionals should also be involved to make these systems more effective, efficient, and sustainable.

Once the system is implemented, proper training programs should be conducted. The

hospital administrators with the help of health information professionals should ensure positive attitude towards HIT.

Regular up-gradation of the system is also required as per the changing needs of the professionals.

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APPENDICES**Annexure 1. List of Abbreviations used in the study**

HIT – Health Information Technology
HIS – Health Information System
IT – Information Technology
DBMS – Database Management System
EHR – Electronic Health Records
PACS – Picture Archiving and Communication System
ICD – International Classification of Disease
HL7 – Health Level Seven
EPR – Electronic Patient Records
HIPAA – Health Insurance Portability and Accountability Act
POMR – Problem Oriented Medical Records
SOAP – Subjective, Objective, Assessment, Plan format
CME – Continuing Medical Education programs

Annexure 2. Tables

Table 3: Awareness of respondents

Study Questions	Designation and response (No. & %)														
	Lecturer				Assistant Professor				Associate Professors & Professors						
	NK	K	G	VG	EX	NK	K	G	VG	EX	NK	K	G	VG	EX
Computers	0	7(26.9)	8(30.8)	7(26.9)	4(15.4)	1(12.5)	2(25)	0	4(50)	1(12.5)	0	1(16.7)	0	3(50)	2(33.3)
DBMS and Its Application	5(19.2)	11(42.3)	8(30.8)	0	2(7.7)	2(25)	3(37.5)	2(25)	1(12.5)	0	1(16.7)	1(16.7)	2(33.3)	1(16.7)	1(16.7)
Internet for patient care, teaching & research	1(3.8)	2(7.7)	6(23.1)	12(46.2)	5(19.2)	0	2(25)	2(25)	3(37.5)	1(12.5)	0	1(16.7)	0	3(50)	2(33.3)
EHR	8(30.8)	8(30.8)	6(23.1)	1(3.8)	3(11.5)	3(37.5)	3(37.5)	2(25)	0	0	1(16.7)	2(33.3)	0	2(33.3)	1(16.7)
PACS	11(42.3)	8(30.8)	4(15.4)	1(3.8)	2(7.7)	5(62.5)	1(12.5)	2(250)	0	0	2(33.3)	1(16.7)	3(50)	0	0
ICD	9(34.6)	6(23.1)	4(15.4)	4(15.4)	3(11.5)	4(50)	1(12.5)	3(37.5)	0	0	4(66.6)	0	1(16.7)	0	1(16.7)
Medical Transcription	11(42.3)	7(26.9)	5(19.2)	1(3.8)	2(7.7)	2(25)	4(50)	0	2(25)	0	2(33.3)	2(33.3)	2(33.3)	0	0
Documentation standards HL-7	20(76.9)	2(7.7)	2(7.7)	1(3.8)	1(3.8)	5(62.5)	2(25)	0	1(12.5)	0	5(83.3)	0	1(16.7)	0	0
Electronic Patient Records (EPR-6)	18(69.2)	4(15.4)	3(11.5)	0	1(3.8)	4(50)	3(37.5)	0	1(12.5)	0	4(66.7)	1(16.7)	1(16.7)	0	0
HIPAA	18(69.2)	3(11.5)	3(11.5)	0	2(7.7)	4(50)	3(37.5)	0	1(12.5)	0	4(66.7)	1(16.7)	0	1(16.7)	0
POMR for medical documentation	17(65.4)	4(15.4)	2(7.7)	2(7.7)	1(3.8)	3(37.5)	4(50)	0	1(12.5)	0	2(33.3)	1(16.7)	1(16.7)	2(33.3)	0
SOAP format for medical documentation	14(53.8)	5(19.2)	1(3.8)	3(11.5)	3(11.5)	1(12.5)	2(25)	2(25)	2(25)	1(12.5)	0	2(33.3)	0	2(33.3)	2(33.3)
Average (%)	42.3	23.1	15.4	11.5	7.7	35.4	31.3	13.5	16.6	3.2	34.7	18	15.3	19.5	12.5

*Note: NK= Not Known, K = Known, G = Good, VG = Very Good, Ex = Excellent.

Table 4: Attitude of respondents towards Health Information Technology in terms of:

Study Questions	Designation and response (No. & %)														
	Lecturer					Assistant Professors					Associate Professors & Professors				
	SD	D	N	A	SA	SD	D	N	A	SA	SD	D	N	A	SA
Improving treatment practices	1(3.8)	0	0	16(61.5)	9(34.6)	0	1(12.5)	1(12.5)	3(37.5)	3(37.50)	0	1(16.7)	0	3(50)	2(33.3)
Analyzing quality of care	1(3.8)	0	1(3.8)	14(53.8)	10(38.5)	0	0	0	5(62.50)	3(37.5)	0	1(16.7)	1(16.7)	3(50)	1(16.7)
Reducing cost of healthcare	1(3.8)	1(3.8)	7(26.9)	12(46.2)	5(19.8)	0	2(25)	2(25)	4(50)	0	1(16.7)	0	1(16.7)	3(50)	1(16.7)
Protecting patient privacy	1(3.8)	1(3.8)	6(23.1)	12(46.2)	6(23.2)	0	0	3(37.5)	3(37.5)	2(25)	0	1(16.7)	1(16.7)	3(50)	1(16.7)

Faster billing process	1(3.8)	0	6(23.1)	12(46.2)	7(26.9)	0	0	2(25)	4(50)	2(25)	0	0	2(33.3)	2(33.3)	2(33.3)
Facilitating in conducting CMEs	1(3.8)	1(3.8)	3(11.5)	13(50)	8(30.8)	0	0	2(25)	4(50)	2(25)	0	0	0	6(100)	0
Reducing paper work	1(3.8)	1(3.8)	1(3.8)	12(46.2)	11(42.3)	0	1(12.5)	1(12.5)	3(37.5)	3(37.5)	0	0	0	5(83.3)	1(16.7)
Providing continuous reports of clinical events	1(3.8)	0	3(11.5)	13(50)	9(34.6)	0	0	0	4(50)	4(50)	0	0	1(16.7)	2(33.6)	3(50)
Scheduling patient appointment	1(3.8)	0	1(3.8)	16(61.5)	8(30.8)	0	1(12.5)	1(12.5)	4(50)	2(25)	0	1(16.7)	0	3(50)	2(33.3)
Gathering information for research and studies	1(3.8)	0	0	10(38.5)	15(57.7)	0	0	0	4(50)	4(50)	0	0	0	2(33.3)	4(66.7)
Promote evidence based practice	1(3.8)	0	0	15(57.7)	10(38.5)	0	0	0	6(75)	2(25)	0	0	3(50)	1(16.7)	2(33.3)
Unavoidable in healthcare practice	2(7.7)	2(7.7)	4(15.4)	9(34.6)	9(34.6)	0	0	3(37.5)	5(62.5)	0	0	0	2(33.3)	2(33.3)	2(33.3)
Average (%)	4.2	1.9	10.3	49.3	34.3	0	5.2	15.7	51	28.1	1.4	5.5	15.3	48.6	29.2

*Note: SD = Strongly Disagree, D = Disagree, N = No Opinion, A = Agree, SA = Strongly Agree

Table 5: Utilization pattern of Health Information Technology in terms of:

Study Questions	Designation and response (No. & %)											
	Lecturer				Assistant Professor				Associate Professors & Professors			
	<i>N</i>	<i>ST</i>	<i>O</i>	<i>A</i>	<i>N</i>	<i>ST</i>	<i>O</i>	<i>A</i>	<i>N</i>	<i>ST</i>	<i>O</i>	<i>A</i>
Documenting patient information	10(38.5)	6(23.1)	2(7.7)	8(30.8)	1(12.5)	2(25)	3(37.5)	2(25)	1(16.7)	1(16.7)	3(50)	1(16.7)
Scheduling patient appointment	16(61.50)	3(11.5)	2(7.7)	5(19.2)	2(25)	1(12.5)	3(37.5)	2(25)	2(33.30)	0	3(50)	1(16.7)
Teaching and demonstration	8(30.8)	6(23.1)	7(26.9)	5(19.2)	2(25)	1(12.5)	4(50)	1(12.5)	0	1(16.7)	4(66.7)	1(16.7)
Research and Study	3(11.5)	7(16.9)	7(26.9)	9(34.6)	0	2(25)	3(37.5)	3(37.5)	0	1(16.70)	3(50)	2(33.3)
Assessing Investigation Result	4(15.4)	5(19.2)	5(19.2)	12(46.2)	2(25)	0	4(50)	2(25)	1(16.7)	1(16.7)	3(50)	1(16.7)
Statistical analysis and presentation of patient information	6(23.1)	6(23.1)	9(34.6)	5(19.2)	2(25)	1(12.5)	2(25)	3(37.5)	1(16.7)	1(16.7)	3(50)	1(16.7)
Average (%)	30.1	21.2	20.5	21.2	18.7	14.6	39.6	27.1	13.9	13.9	52.8	19.4

*Note: N = Never, ST = Sometime, O = Often, A = Always

ANNEXURE 3. SURVEY QUESTIONNAIRE

Dear Colleagues,

We are conducting a survey to know the **Awareness, Attitude, and Utilization pattern of Health Information Technology among Allied Health Professionals**, and would appreciate your comments / views.

Name: _____, **Sex. M/F,** **Age** _____,

Designation. _____, **Department.** _____,

For the below mentioned statement, Please indicate (✓) your appropriate response by marking one of the boxes to the right of the statement.

1. Awareness of Health Information Technology

Q. No. How do you rate your awareness related to health information Technology in terms of:

		Ex	VG	G	A	BA
1	Computer and its peripheral devices	<input type="checkbox"/>				
2	Database Management System and its application in medical documentation	<input type="checkbox"/>				
3	Internet usage	<input type="checkbox"/>				
4	Technologies involved; such as	<input type="checkbox"/>				
	- electronic health records,	<input type="checkbox"/>				
	- picture archiving and communication system (PACS), etc.	<input type="checkbox"/>				
5	Disease Coding standards; ICD-10, ICD-9-CM,	<input type="checkbox"/>				
6	Medical Transcription for medical documentation	<input type="checkbox"/>				
7	Standards for health information system;	<input type="checkbox"/>				
	- HL-7,	<input type="checkbox"/>				
	- EPR-6,	<input type="checkbox"/>				
	- HIPPA	<input type="checkbox"/>				
8	Format of health records,	<input type="checkbox"/>				
	• Problem Oriented Medical Records (POMR)	<input type="checkbox"/>				
	• SOAP (Subjective, Objective, Assessment & Plan) format,	<input type="checkbox"/>				

Excellent = Ex, Very Good = VG, Good = G, Average = A, Below Average = BA

2. Opinion on Health Information Technology

Q. No. Do you think health information Technology helps in

SD D N A SA

1	Improving treatment practices	<input type="checkbox"/>				
2	analyzing the quality of care	<input type="checkbox"/>				
3	Reducing the cost of healthcare	<input type="checkbox"/>				
4	Protecting the privacy of patients information	<input type="checkbox"/>				
6	Faster financial process (Billing etc.)	<input type="checkbox"/>				
7	Conducting various Continuing Medical Educational program	<input type="checkbox"/>				
8	Reduces the paper work and improves patient care documentation	<input type="checkbox"/>				
9	Providing continuous reports of clinical events occurring in care of patient	<input type="checkbox"/>				
10	Scheduling the patient appointment	<input type="checkbox"/>				
11	Gathering information in research and studies	<input type="checkbox"/>				
12	Promoting evidence based healthcare practice	<input type="checkbox"/>				
13	HIS is unavoidable in healthcare practice	<input type="checkbox"/>				

SD = Strongly Disagree, D=Disagree, N= No Opinion, A= Agree, SA= Strongly Agree

3. Utilization pattern of Health Information Technology

Q. No.	Utilization pattern of Health Information Technology in terms (frequency)	N	ST	O	A
1	Documenting patient information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Scheduling patient appointment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Teaching and demonstration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Research and study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Accessing investigation result and other clinical data for treatment and therapy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Generating various statistical analysis and presentation of patient information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Never = N, Sometimes = ST, Often = O, Always = A

4. What more do you expect from health information technology?
